

REMARKS

Claims 1-4, 6-16, 21-23 and 25 are pending. By this Amendment, claims 1-2, 6-9 and 13-16 are amended and claims 5 and 20 are canceled without prejudice or disclaimer. Reconsideration in view of the above amendments or the following remarks is respectfully requested.

A. The Office Action rejects claims 1-5, 7 and 11-13 under 35 U.S.C. §102(e) over US Patent No. 7,024,221 to Paulus et al. (hereafter "Paulus") and US Patent No. 6,907,089 to Jensen et al. (hereafter "Jensen"). Since the prior art including the applied references, individually or in combination, fail to disclose or suggest features of the claims, the rejection is respectfully traversed.

Applicants respectfully submit that at least features of a low-IF analog radio receiver including a first analog front-end down-conversion mixer, a second analog down-conversion mixer to convert said low-IF I and Q signals into a base-band signal with desired signal centered at DC, said second analog down-conversion mixer to translate a DC offset in frequency domain to a frequency higher than said desired signal, said translated DC offset located at the same frequency of a second LO frequency; and an analog notch filter coupled to said second analog down-conversion mixer to reduce said translated DC offset, wherein said low-IF analog radio receiver is configured to use full-analog channel selection and filtering and combinations thereof as recited are not disclosed or suggested by the prior art, Paulus nor Jensen, or their combination.

A1. Applicants respectfully submit that Paulus discloses a digital down-converter circuitry 427 in receiver digital circuitry 851 in contrast to a second analog down-conversion mixer in an analog receiver recited in claim 1. See at least Figure 8 and column 14 lines 39-53 of Paulus.

Applicants respectfully submit that Paulus discloses a digital filter circuitry 436 in receiver digital circuitry 851 in contrast to an analog notch filter coupled to the second analog down-

conversion mixer to reduce said translated DC offset in an analog receiver recited in claim 1. See at least Figures 8, 17A-17B, claim 1 and column 16, lines 3-49 of Paulus.

A2. Applicants respectfully submit that Jensen discloses digital IF signal 34 or digital signal 120 transmitted to digital demodulator 16 (Figure 1), digital demodulator 52 (Figure 2), digital demodulator 72 (Figure 3), digital demodulator 92 (Figure 4), in contrast to a second analog down-conversion mixer in an analog receiver recited in claim 1. See at least Figures 1-6 of Jensen.

A3. Paulus and Jensen teach away from recited features of claim 1.

Thus, Applicants respectfully submit that the prior art, Paulus and Jensen, individually or in combination, would not result in at least features of a second analog down-conversion mixer or an analog notch filter coupled to the second analog down-conversion mixer in an analog receiver and combinations thereof recited in claim 1. Paulus discloses receiver digital circuitry 212 (figures 2A-2D), receiver digital circuitry 426 (Figures 4-7). See figures 2A-2D, and 4-8 of Paulus. Paulus further discloses reasons for receiver digital IF circuitry. See column 12, line 34 to column 13, line 16 of Paulus. Accordingly, Applicants respectfully submit that Paulus and Jensen teach away from at least features of a second analog down-conversion mixer or an analog notch filter in an analog receiver and combinations thereof recited in claim 1 and do not teach or suggest modifications to their disclosure or the prior art that would result recited features of claim 1.

For at least the reasons set forth above, Applicants respectfully submit that claim 1 defines patentable subject matter. Claims 2-4, 7 and 11-13 respectively depend from claims 1 and 14, and therefore, also define patentable subject matter for at least that reason as well as their additionally recited features. Claim 5 is canceled without prejudice or disclaimer. Withdrawal of the rejection of claims 1-5, 7 and 11-13 under 35 U.S.C. §103 is respectfully requested.

B. The Office Action rejects claims 1, 6, 8-10, 14-16, 20-23 and 25 under 35 U.S.C. §103(a) over US Patent Publication 2003/0067359 to Darabi et al. (hereafter "Darabi").

Paulus and Jensen. Since the prior art including the applied references, individually or in combination, fail to disclose or suggest features of the claims, the rejection is respectfully traversed.

B1. Applicants respectfully submit that Darabi discloses a receiver 10 front end that includes mixers 24 (analog) that down convert an output of LNA 22 to a low IF frequency that is input to amplifier 28. See paragraph 0088 of Darabi. Mixers 30 (analog) convert the output of amplifier 28 to baseband. See paragraph 0090 of Darabi.

However, the Office Action states Darabi does not disclose “a DC offset removal technique such that the desired signal (the desired signal is digitalized by ADC before any further processing) is centered at DC and said translate a DC-offset in frequency domain to a frequency higher than said desired signal, said translated DC-offset located at the same frequency of a second LO frequency and a notch filter coupled to said second analog down-conversion mixer to reduce said translated DC offset”. See page 9, lines 1-6 of the Office Action.

B2. The Office Action asserts Paulus and Jensen disclose or suggest such features and combinations thereof missing from Darabi. Applicants respectfully disagree.

Namely, the Office Action states Paulus discloses “a method for DC removal in a receiver ... using a second (analog) down-conversion mixing to down convert said IF signals to obtain a desired signal at DC (citing digital filter circuit 436, and Figures 8 and 17A-17B of Paulus). See page 9 lines 7-17 of the Office Action.

In contrast to the recited second analog down-conversion mixer and combinations of claim 1, Paulus discloses converting an analog intermediate frequency signal 841(I) and 842(Q) to a digital (low-IF signal) before signal processing to address removing a DC offset (through digital signal processing). Jensen discloses digital signal processing at the IF stage also. See Section A2 of these Remarks above.

B3. The Office Action asserts it would be obvious to modify Darabi with the teaching of Paulus (and Jensen) to reduce distortion. See page 10 lines 4-7 of the Office Action.

Applicants respectfully submit that Paulus teaches the specific benefits of converting the IF signal to digital combined with subsequent processing for DC offset removal. See column 12, line 34 to column 13, line 16 of Paulus. Thus, the asserted modification of Darabi by Paulus in the Office Action (and/or Jensen) would replace the Darabi mixer 30 with ADS 836 and receiver digital circuitry 851 (or at least ADC 836, digital down converter circuitry 427 and digital filter circuitry 436) of Paulus. See Figure 8 of Paulus.

Accordingly, Applicants respectfully submit that the prior art and teachings of Darabi as modified by Paulus do not result in at least features of a second analog down-conversion mixer to convert said low-IF I and Q signals into a base-band signal with desired signal centered at DC, said second analog down-conversion mixer to translate a DC offset in frequency domain to a frequency higher than said desired signal, said translated DC offset located at the same frequency of a second I/O frequency; and an analog notch filter coupled to said second analog down-conversion mixer to reduce said translated DC offset, wherein said low-IF analog radio receiver is configured to use full-analog channel selection and filtering and combinations thereof as recited in claim 1.

Applicants respectfully submit that the prior art including Darabi, Paulus and Jensen, individually or in combination, do not teach or suggest at least features of a second analog down-conversion mixer, an analog notch filter in a low-IF analog radio receiver is configured to use full-analog channel selection and filtering and combinations thereof as recited in claim 1. not result in features and combinations thereof recited in claim 1.

For at least the reasons set forth above, Applicants respectfully submit that claim 1 defines patentable subject matter. Claim 14 defines patentable subject matter for at least reasons similar to claim 1. Claims 6, 8-10, 15-16, 21-23 and 25 respectively depend from claims 1 and 14, and therefore, also define patentable subject matter for at least that reason as well as their additionally recited features. Claim 20 is canceled without prejudice or disclaimer. Withdrawal of the rejection of claims 1, 6, 8-10, 14-16, 21-23 and 25 under 35 U.S.C. §103 is respectfully requested.

C. Statement of the Substance of the Interview

Applicants gratefully acknowledge the courtesies extended by Examiner Chen to Applicant's representative, Carl Wesolowski, during an October 9, 2008 telephone interview. The substance of the interview is incorporated in the following remarks.

During the interview, claims 1 and 14 were argued to be allowable over the Paulus and Jensen applied references because the Paulus discloses IF receiver digital circuitry 851 and Jensen discloses digital IF signals 34, 120 and digital demodulators, 52, 72, 92.

During the interview, claims 1 and 14 were argued to be allowable over Darabi, Paulus and Jensen. Darabi discloses a receiver 10 front end that includes mixers 24 and mixers 30, but not features variously recited in claims 1 and 14. A modification of Darabi by Paulus and/or Jensen would result in digital signal processing in an IF receiver stage or additional analog to digital conversion components in contrast to the recited features and combinations thereof.

The outstanding rejections of the independent claims was argued to be in error on these grounds, however, no agreement was reached to this point.

No exhibit was presented or demonstration conducted during the interview.

Applicant respectfully requests that this paper be included in the record for purposes of satisfying the requirements under MPEP §713.04.

CONCLUSION

Prompt examination and allowance in due course are respectfully solicited. Should the Examiner have any questions regarding the above-identified application, the Examiner is invited to contact the undersigned attorney, **Carl R. Wesolowski**, at the telephone number listed below.

To the extent necessary a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 50-4574 and please credit any excess fees to such deposit account.

Respectfully submitted,
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